Clouds on Tap: Harvesting Fog Around the World

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[Photo: Fog collectors in Peru.]

Thirteen years ago, scientists approached the International Development Research Centre with a proposal to collect fog to supplement the water supply of Chungungo, a remote Chilean village. In 1992, fog-water flowed out of local taps for the first time. Today, this simple technology has more than doubled Chungungo's per capita water supply, while inspiring similar efforts in other communities around the world.

The Chungungo experience was one of the highlights this summer at the First International Conference on Fog & Fog Collection in Vancouver, Canada. More than 160 scientists and water managers attended the event to share their research on fog collection in places ranging from the Sultanate of Oman to Hawaii, South Africa, the Canary Islands, Croatia, and Peru.

Solving water problems

Robert Schemenauer, the conference organizer and Emeritus Research Scientist at Environment Canada, played a key role in the development and evaluation of the Chilean project, as well as in expanding its applications to other regions of the world. "We are always going to need some way to solve water problems for rural villages, isolated villages, and clusters of remote homes in the uplands of developing countries. That's how the fog collector projects got started, by trying to solve water problems that couldn't be solved any other way," he explained.

A fog collector consists of ultraviolet-resistant polypropylene mesh, stretched horizontally between two upright poles. The net is positioned at right angles to the prevailing winds. As fog passes through the net, it forms larger water droplets. The droplets run down the mesh and drip into gutters. The water then flows into pipes, which feed into a reservoir.

Coastal desert

The idea of harnessing fog as a source of drinking water has been studied for decades, but it was in the mountains of the arid coastal desert of northern Chile where it was first put into practice. In 1987, there were 50 fog collectors — each one 4 metres wide and 12 metres long — located on a ridge line above the fishing village of Chungungo. Today, a total of 88 collectors are expected to provide more than 40 litres of water per person per day — compared with just 14 litres before the project began. The collectors are managed by a local committee, which charges a small fee to each household. If a household greatly exceeds the average monthly water consumption, the fee is much higher.

"This project was always designed to supplement the existing water supply, which was trucked-in water," said Pilar Cereceda, the project leader and a professor at the Pontificia Universidad Catolica of Chile. "But during the first year of the project the truck did not have to come to the village. Even during exceptionally dry years, the truck has only had to come from time to time. So now we believe that the main source of water for this area is the fog collectors," she told the Vancouver conference.

A village transformed

Chungungo has been virtually transformed by the presence of a dependable and affordable water supply. Before the collectors were installed, the village population was estimated at 350 people. Many people had left Chungungo in hopes of finding a livelihood in larger cities. Some of them have since returned and the population now exceeds 500. The fog collectors provide enough water for domestic consumption and for four hectares of community vegetable gardens, trees planted along the main road in the village, and a public park in the centre of the village.

One of the main conclusions of the Chilean experiment is that the participation of local people is vital. "It is so important to involve the community not only so that people know about the project, but so that they are involved in building the collectors, in maintaining the collectors, in organizing a local water committee, and in donating their labour to keep water costs at a minimum. This system depends on the clouds, but if people know how to use this simple technology and organize themselves well it will really work," stressed Professor Cereceda.

Pattie LaCroix is a Vancouver-based writer. (Photo: N. MacMillan, IDRC)

ERRATUM:

When this article was first published no mention was made of the contribution made by the United Nations Educational, Scientific and Cultural Organization (UNESCO) to the development of fogcatcher technology. Indeed, had it not been for UNESCO's early support of a dedicated group of Chilean and Peruvian professionals, it is unlikely this project would ever have come to IDRC's attention.

Resource Persons:

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